Whites Electronics, Inc.

GMK 24k

FCC 15.209:2018

Inductive Radio

Report # WHIT0068.1

NVLAP LAB CODE: 200630-0

CERTIFICATE OF TEST

Last Date of Test: May 3, 2018
Whites Electronics, Inc.
Model: GMK 24k

Radio Equipment Testing

Standards

Specification	Method
FCC 15.209:2018	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
6.4	Field Strength of Fundamental	Yes	Pass	
6.4, 6.5	Spurious Radiated Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Kyle Holgate, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIT / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

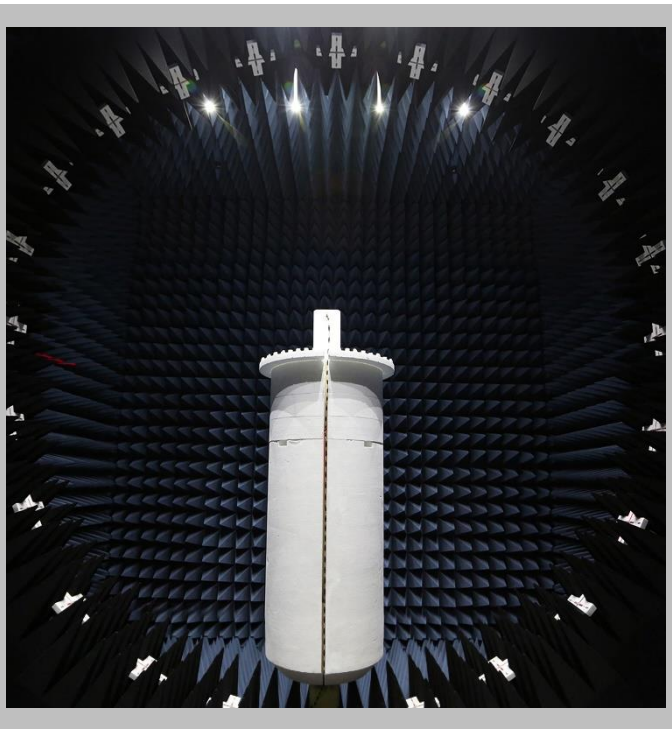
MIC – Recognized by MIC as a CAB for the acceptance of test data.

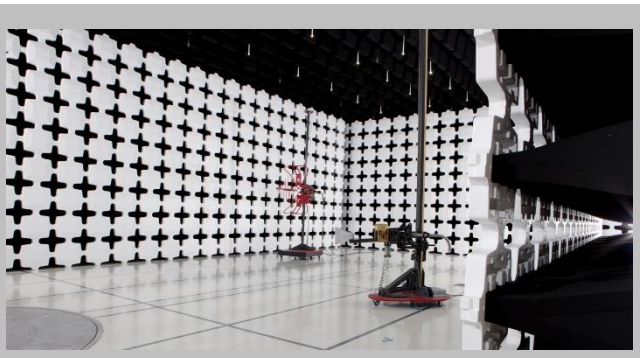
SCOPE

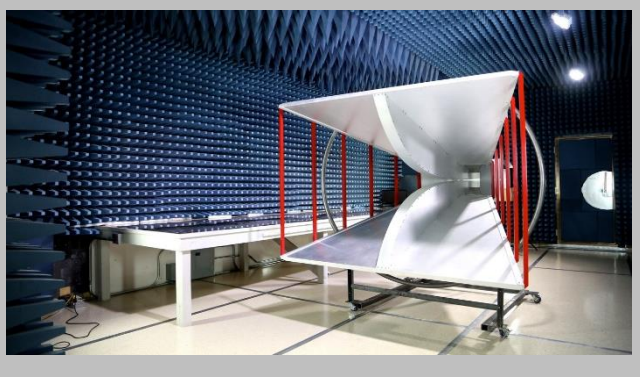
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157

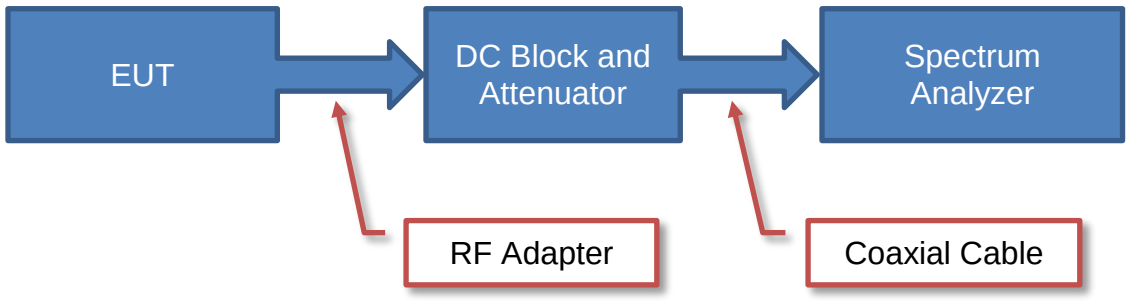




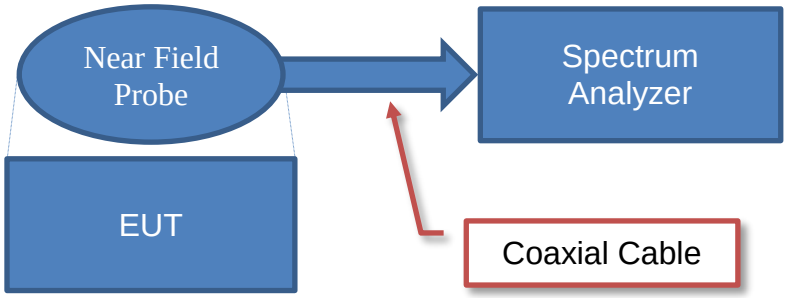


Test Setup Block Diagrams

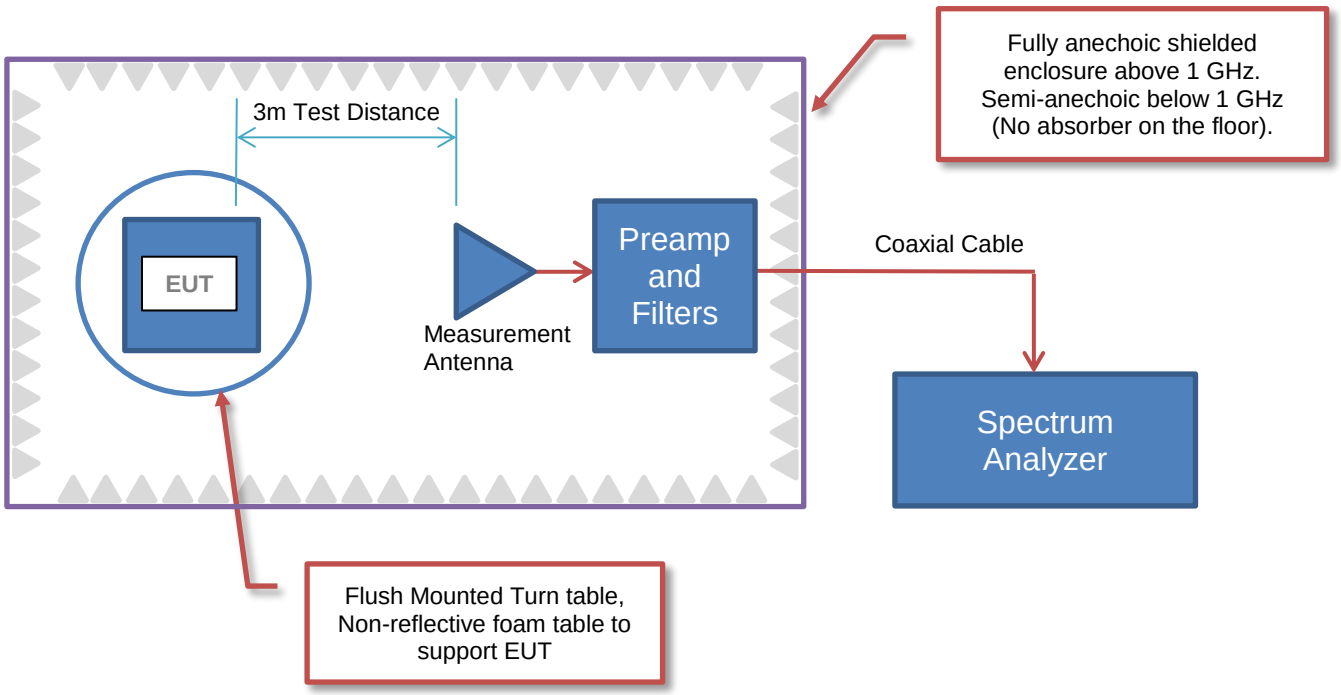
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Whites Electronics, Inc.
Address:	1011 Pleasant Valley Road
City, State, Zip:	Sweet Home, OR 97386-1098
Test Requested By:	Charles Tuchardt
Model:	GMK 24k
First Date of Test:	May 3, 2018
Last Date of Test:	May 3, 2018
Receipt Date of Samples:	May 3, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Metal Detector

Testing Objective:
To demonstrate compliance of the inductive portion of the device to FCC Part 15.209 specifications.

CONFIGURATIONS

Configuration WHIT0068- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Metal Detector	Whites Electronics, Inc.	GMK 24k	None
10 Inch Antenna	Whites Electronics, Inc.	GMT 24k	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Headphones	Whites Electronics, Inc.	StarLite	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Signal Cable	Yes	1.4m	No	Metal Detector	Antenna
Headphone Cable	No	1m	No	Metal Detector	Headphones

Configuration WHIT0068- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Metal Detector	Whites Electronics, Inc.	GMK 24k	None
6 Inch Antenna	Whites Electronics, Inc.	GMT 24k	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Headphones	Whites Electronics, Inc.	StarLite	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Signal Cable	Yes	1.4m	No	Metal Detector	Antenna
Headphone Cable	No	1m	No	Metal Detector	Headphones

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/3/2018	Field Strength of Fundamental	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	5/3/2018	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

FIELD STRENGTH OF FUNDAMENTAL

PSA-ESCI 2018.03.06

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuous Tx at 47.3 kHz

POWER SETTINGS INVESTIGATED

12 VDC via Battery

CONFIGURATIONS INVESTIGATED

WHIT0068 - 2
WHIT0068 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	9 kHz	Stop Frequency	490 kHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	None	10m Test Distance Cable	EVL	28-Feb-2018	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4443A	AFB	16-May-2017	12 mo
Antenna - Loop	EMCO	6502	AOA	6-Jul-2016	24 mo

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The center of the loop antenna was maintained at 1m above the ground plane during the testing.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.4, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

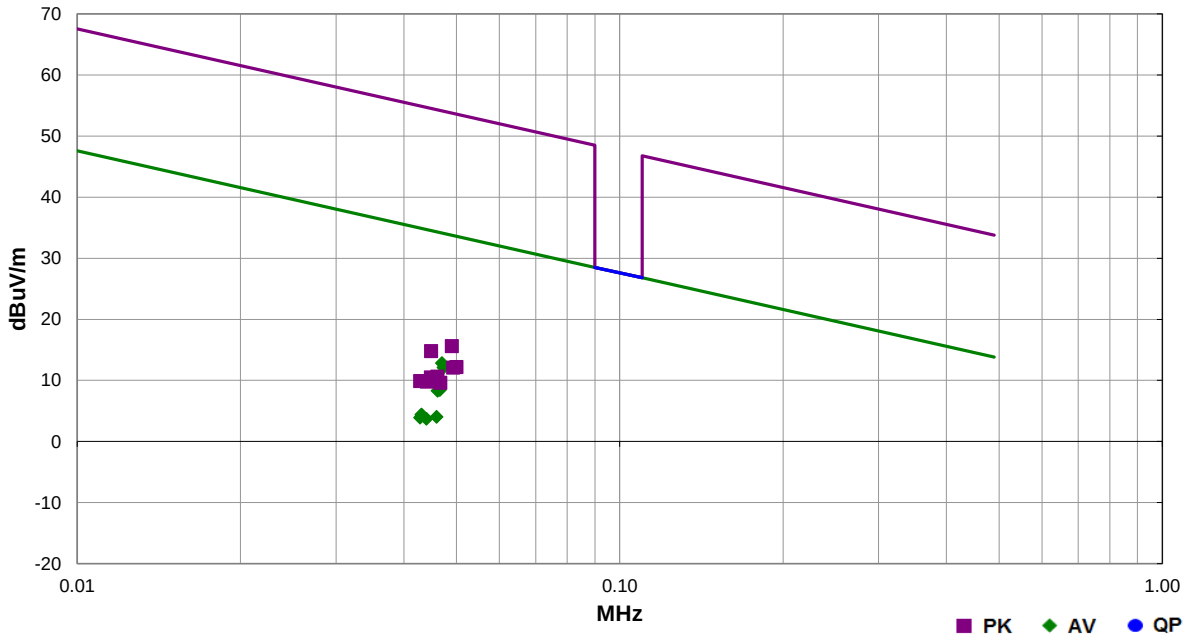
FIELD STRENGTH OF FUNDAMENTAL

EmiR5 2018.03.06.1 PSA-ESCI 2018.03.06

Work Order:	WHIT0068	**Date:**	3-May-2018		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV11	**Humidity:**	43.7% RH		
Serial Number:	None	**Barometric Pres.:**	1023 mbar	**Tested by:**	Travis Pow and Jeff Alcoke
EUT:	GMK 24k				
Configuration:	1				
Customer:	Whites Electronics, Inc.				
Attendees:	None				
EUT Power:	12 VDC via Battery				
Operating Mode:	Continuous Tx at 47.3 kHz				
Deviations:	None				
Comments:	See comments below for EUT and Antenna orientation				

Test Specifications	**Test Method**
FCC 15.209:2018	ANSI C63.10:2013

Run #	2	**Test Distance (m)**	10	**Antenna Height(s)**	1(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.047	60.5	11.4	1.0	277.0	10.0	0.0	Perp to EUT	AV	-59.1	12.8	34.1	-21.3	EUT on Side
0.047	59.9	11.3	1.0	93.0	10.0	0.0	Perp to EUT	AV	-59.1	12.1	34.1	-22.0	EUT Vertical
0.047	56.1	11.4	1.0	188.0	10.0	0.0	Par to EUT	AV	-59.1	8.4	34.2	-25.8	EUT on Side
0.046	56.0	11.4	1.0	34.0	10.0	0.0	Par to EUT	AV	-59.1	8.3	34.3	-26.0	EUT Vertical
0.046	51.6	11.5	1.0	208.0	10.0	0.0	Par to EUT	AV	-59.1	4.0	34.3	-30.3	EUT Horizontal
0.043	51.8	11.7	1.0	313.0	10.0	0.0	Par to GND	AV	-59.1	4.4	34.9	-30.5	EUT Vertical
0.043	51.7	11.7	1.0	292.0	10.0	0.0	Par to GND	AV	-59.1	4.3	34.9	-30.6	EUT on Side
0.043	51.3	11.7	1.0	332.0	10.0	0.0	Par to GND	AV	-59.1	3.9	34.9	-31.0	EUT Horizontal
0.044	51.2	11.6	1.0	50.0	10.0	0.0	Perp to EUT	AV	-59.1	3.7	34.7	-31.0	EUT Horizontal
0.049	63.5	11.2	1.0	277.0	10.0	0.0	Par to GND	PK	-59.1	15.6	53.8	-38.2	EUT on Side
0.045	62.3	11.6	1.0	93.0	10.0	0.0	Perp to EUT	PK	-59.1	14.8	54.5	-39.7	EUT Vertical
0.050	60.2	11.1	1.0	188.0	10.0	0.0	Par to EUT	PK	-59.1	12.2	53.6	-41.4	EUT on Side
0.049	60.0	11.2	1.0	34.0	10.0	0.0	Par to EUT	PK	-59.1	12.1	53.7	-41.6	EUT Vertical
0.046	58.3	11.4	1.0	292.0	10.0	0.0	Par to GND	PK	-59.1	10.6	54.3	-43.7	EUT on Side
0.045	58.0	11.6	1.0	208.0	10.0	0.0	Par to EUT	PK	-59.1	10.5	54.5	-44.0	EUT Horizontal
0.047	57.3	11.4	1.0	313.0	10.0	0.0	Par to GND	PK	-59.1	9.6	54.2	-44.6	EUT Vertical
0.044	57.3	11.6	1.0	50.0	10.0	0.0	Perp to EUT	PK	-59.1	9.8	54.7	-44.9	EUT Horizontal
0.043	57.3	11.7	1.0	332.0	10.0	0.0	Par to Gnd	PK	-59.1	9.9	54.9	-45.0	EUT Horizontal

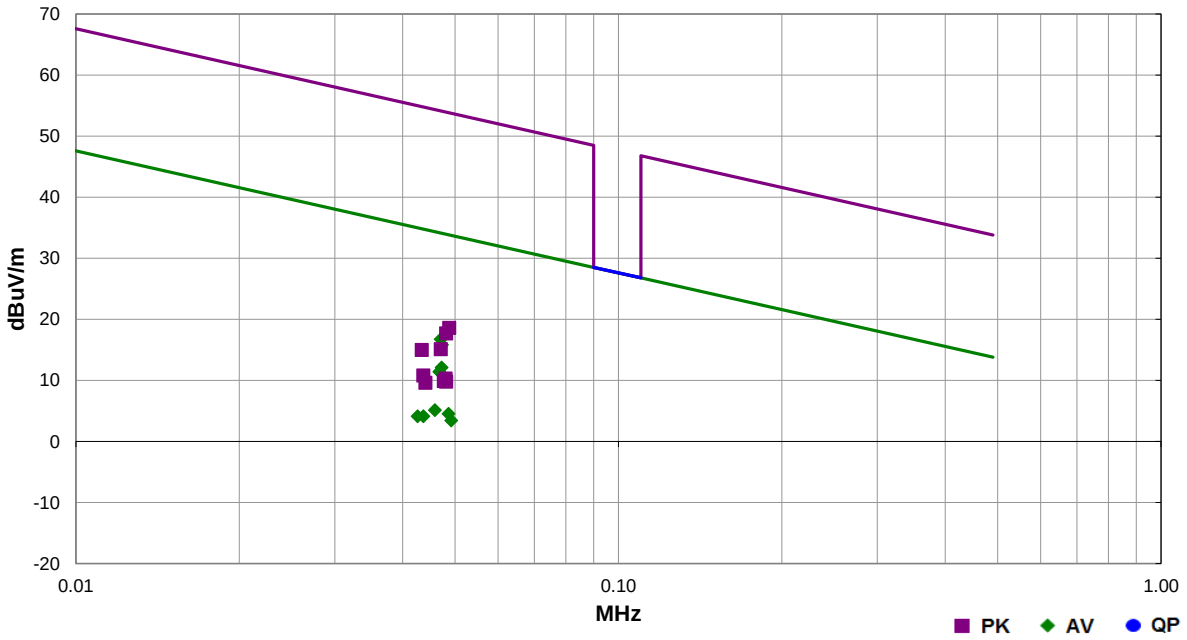
FIELD STRENGTH OF FUNDAMENTAL

EmiR5 2018.03.06.1 PSA-ESCI 2018.03.06

Work Order:	WHIT0068	**Date:**	3-May-2018		
Project:	None	**Temperature:**	21.6 °C		
Job Site:	EV11	**Humidity:**	46.3% RH		
Serial Number:	None	**Barometric Pres.:**	1028 mbar	**Tested by:**	Travis Pow and Jeff Alcoke
EUT:	GMK 24k				
Configuration:	2				
Customer:	Whites Electronics, Inc.				
Attendees:	None				
EUT Power:	12 VDC via Battery				
Operating Mode:	Continuous Tx at 47.3 kHz				
Deviations:	None				
Comments:	See comments below for EUT and Antenna orientation				

Test Specifications	**Test Method**
FCC 15.209:2018	ANSI C63.10:2013

Run #	8	**Test Distance (m)**	10	**Antenna Height(s)**	1(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.047	64.4	11.4	1.0	276.0	10.0	0.0	Perp to EUT	AV	-59.1	16.7	34.1	-17.4	EUT on Side
0.047	63.6	11.3	1.0	274.0	10.0	0.0	Perp to EUT	AV	-59.1	15.8	34.1	-18.3	EUT Vertical
0.047	59.8	11.4	1.0	217.0	10.0	0.0	Par to EUT	AV	-59.1	12.1	34.1	-22.0	EUT on Side
0.047	59.1	11.4	1.0	359.0	10.0	0.0	Par to EUT	AV	-59.1	11.4	34.2	-22.8	EUT Vertical
0.046	52.7	11.5	1.0	310.0	10.0	0.0	Par to EUT	AV	-59.1	5.1	34.3	-29.2	EUT Horizontal
0.049	52.4	11.2	1.0	354.0	10.0	0.0	Par to GND	AV	-59.1	4.5	33.8	-29.3	EUT on Side
0.049	51.3	11.2	1.0	110.0	10.0	0.0	Par to GND	AV	-59.1	3.4	33.7	-30.3	EUT Vertical
0.044	51.5	11.7	1.0	197.0	10.0	0.0	Par to GND	AV	-59.1	4.1	34.8	-30.7	EUT Horizontal
0.043	51.4	11.8	1.0	62.0	10.0	0.0	Perp to EUT	AV	-59.1	4.1	35.0	-30.9	EUT Horizontal
0.049	66.5	11.2	1.0	276.0	10.0	0.0	Perp to EUT	PK	-59.1	18.6	53.8	-35.2	EUT on Side
0.048	65.5	11.3	1.0	274.0	10.0	0.0	Perp to EUT	PK	-59.1	17.7	53.9	-36.2	EUT Vertical
0.047	62.8	11.4	1.0	217.0	10.0	0.0	Par to EUT	PK	-59.1	15.1	54.1	-39.0	EUT on Side
0.043	62.4	11.7	1.0	359.0	10.0	0.0	Par to EUT	PK	-59.1	15.0	54.8	-39.8	EUT Vertical
0.048	58.1	11.3	1.0	110.0	10.0	0.0	Par to GND	PK	-59.1	10.3	54.0	-43.7	EUT Vertical
0.044	58.2	11.7	1.0	310.0	10.0	0.0	Par to EUT	PK	-59.1	10.8	54.8	-44.0	EUT Horizontal
0.048	57.6	11.3	1.0	197.0	10.0	0.0	Par to GND	PK	-59.1	9.8	53.9	-44.1	EUT Horizontal
0.048	57.7	11.3	1.0	354.0	10.0	0.0	Par to GND	PK	-59.1	9.9	54.0	-44.1	EUT on Side
0.044	57.1	11.6	1.0	62.0	10.0	0.0	Perp to EUT	PK	-59.1	9.6	54.7	-45.1	EUT Horizontal

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2018.03.06

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Continuous Tx at 47.3 kHz

POWER SETTINGS INVESTIGATED

12 VDC via Battery

CONFIGURATIONS INVESTIGATED

WHIT0068 - 2

WHIT0068 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	9 kHz	Stop Frequency	490 kHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	E4443A	AFB	16-May-2017	12 mo
Cable	None	10m Test Distance Cable	EVL	28-Feb-2018	12 mo
Antenna - Loop	EMCO	6502	AOA	6-Jul-2016	24 mo

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The center of the loop antenna was maintained at 1m above the ground plane during the testing.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

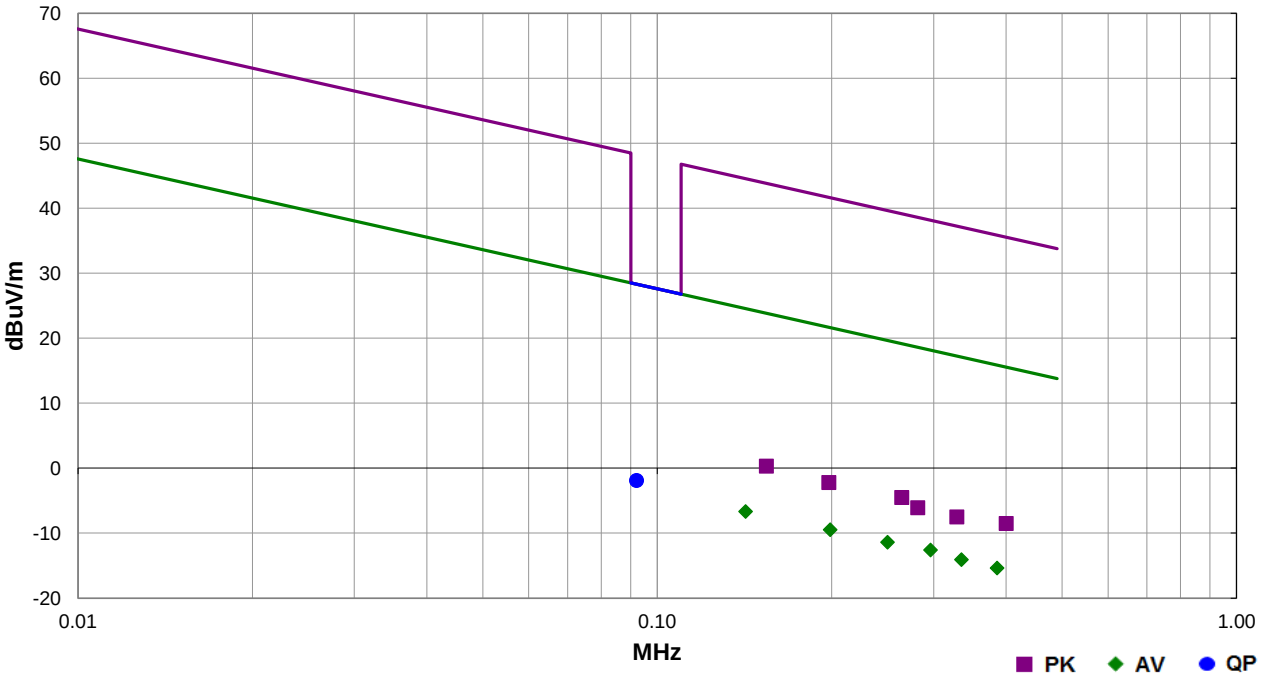
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.03.06.1 PSA-ESCI 2018.03.06

Work Order:	WHIT0068	**Date:**	3-May-2018		
Project:	None	**Temperature:**	23 °C		
Job Site:	EV11	**Humidity:**	43.7% RH		
Serial Number:	None	**Barometric Pres.:**	1023 mbar	**Tested by:**	Travis Pow and Jeff Alcoke
EUT:	GMK 24k				
Configuration:	1				
Customer:	Whites Electronics, Inc.				
Attendees:	None				
EUT Power:	12 VDC via Battery				
Operating Mode:	Continuous Tx at 47.3 kHz				
Deviations:	None				
Comments:	See comments below for EUT and Antenna orientation				

Test Specifications	**Test Method**
FCC 15.209:2018	ANSI C63.10:2013

Run #	2	**Test Distance (m)**	10	**Antenna Height(s)**	1(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.092	46.6	10.6	1.0	337.0	10.0	0.0	Perp to EUT	QP	-59.1	-1.9	28.3	-30.2	EUT on Side
0.296	36.4	10.1	1.0	217.0	10.0	0.0	Perp to EUT	AV	-59.1	-12.6	18.2	-30.8	EUT on Side
0.199	39.5	10.1	1.0	342.0	10.0	0.0	Perp to EUT	AV	-59.1	-9.5	21.6	-31.1	EUT on Side
0.250	37.5	10.2	1.0	139.0	10.0	0.0	Perp to EUT	AV	-59.1	-11.4	19.7	-31.1	EUT on Side
0.335	34.9	10.1	1.0	173.0	10.0	0.0	Perp to EUT	AV	-59.1	-14.1	17.1	-31.2	EUT on Side
0.142	42.2	10.2	1.0	29.0	10.0	0.0	Perp to EUT	AV	-59.1	-6.7	24.6	-31.3	EUT on Side
0.386	33.6	10.1	1.0	153.0	10.0	0.0	Perp to EUT	AV	-59.1	-15.4	15.9	-31.3	EUT on Side
0.154	49.2	10.2	1.0	29.0	10.0	0.0	Perp to EUT	PK	-59.1	0.3	43.9	-43.6	EUT on Side
0.264	44.5	10.1	1.0	139.0	10.0	0.0	Perp to EUT	PK	-59.1	-4.5	39.2	-43.7	EUT on Side
0.198	46.8	10.1	1.0	342.0	10.0	0.0	Perp to EUT	PK	-59.1	-2.2	41.7	-43.9	EUT on Side
0.400	40.5	10.1	1.0	153.0	10.0	0.0	Perp to EUT	PK	-59.1	-8.5	35.6	-44.1	EUT on Side
0.282	42.9	10.1	1.0	217.0	10.0	0.0	Perp to EUT	PK	-59.1	-6.1	38.6	-44.7	EUT on Side
0.329	41.5	10.1	1.0	173.0	10.0	0.0	Perp to EUT	PK	-59.1	-7.5	37.3	-44.8	EUT on Side

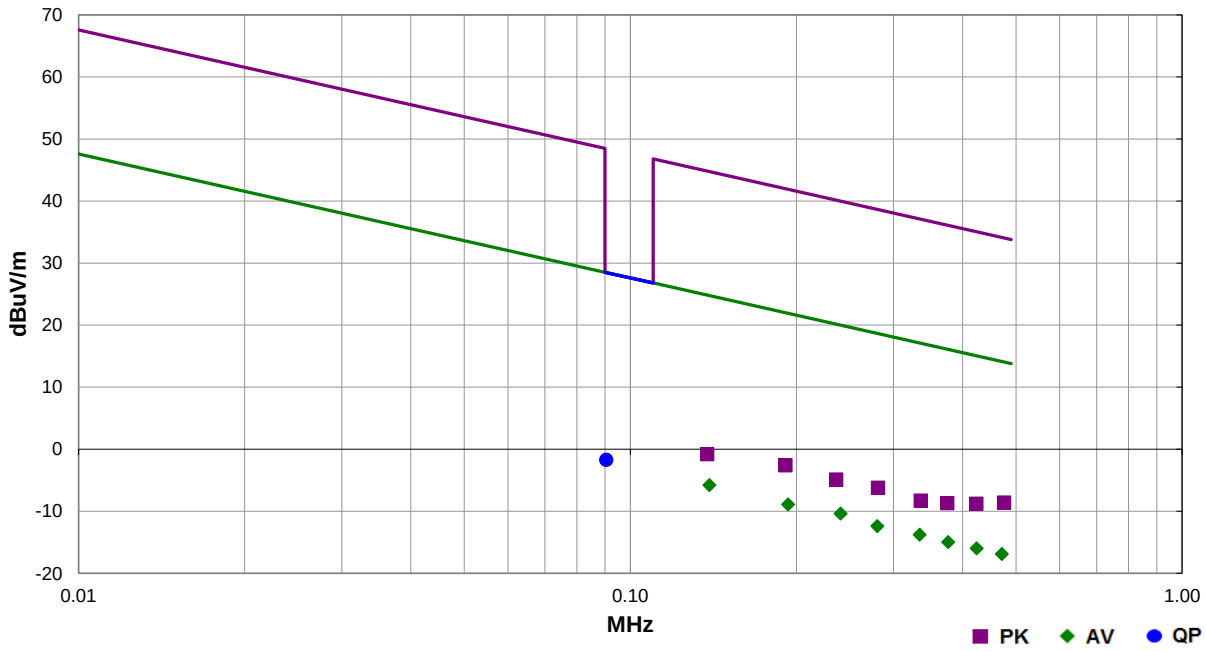
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.03.06.1 PSA-ESCI 2018.03.06

Work Order:	WHIT0068	**Date:**	3-May-2018		
Project:	None	**Temperature:**	21.6 °C		
Job Site:	EV11	**Humidity:**	46.3% RH		
Serial Number:	None	**Barometric Pres.:**	1028 mbar	**Tested by:**	Travis Pow and Jeff Alcoke
EUT:	GMK 24k				
Configuration:	2				
Customer:	Whites Electronics, Inc.				
Attendees:	None				
EUT Power:	12 VDC via Battery				
Operating Mode:	Continuous Tx at 47.3 kHz				
Deviations:	None				
Comments:	See comments below for EUT and Antenna orientation				

Test Specifications	**Test Method**
FCC 15.209:2018	ANSI C63.10:2013

Run #	8	**Test Distance (m)**	10	**Antenna Height(s)**	1(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.090	46.7	10.7	1.0	56.0	10.0	0.0	Perp to EUT	QP	-59.1	-1.7	28.5	-30.2	EUT on Side
0.241	38.5	10.2	1.0	291.0	10.0	0.0	Perp to EUT	AV	-59.1	-10.4	20.0	-30.4	EUT on Side
0.139	43.1	10.2	1.0	224.0	10.0	0.0	Perp to EUT	AV	-59.1	-5.8	24.8	-30.6	EUT on Side
0.193	40.1	10.1	1.0	179.0	10.0	0.0	Perp to EUT	AV	-59.1	-8.9	21.9	-30.8	EUT on Side
0.335	35.2	10.1	1.0	206.0	10.0	0.0	Perp to EUT	AV	-59.1	-13.8	17.1	-30.9	EUT on Side
0.472	32.0	10.2	1.0	341.0	10.0	0.0	Perp to EUT	AV	-59.1	-16.9	14.1	-31.0	EUT on Side
0.280	36.6	10.1	1.0	94.0	10.0	0.0	Perp to EUT	AV	-59.1	-12.4	18.7	-31.1	EUT on Side
0.377	34.0	10.1	1.0	35.0	10.0	0.0	Perp to EUT	AV	-59.1	-15.0	16.1	-31.1	EUT on Side
0.424	33.0	10.1	1.0	113.0	10.0	0.0	Perp to EUT	AV	-59.1	-16.0	15.1	-31.1	EUT on Side
0.476	40.3	10.2	1.0	341.0	10.0	0.0	Perp to EUT	PK	-59.1	-8.6	34.1	-42.7	EUT on Side
0.424	40.2	10.1	1.0	113.0	10.0	0.0	Perp to EUT	PK	-59.1	-8.8	35.1	-43.9	EUT on Side
0.191	46.4	10.1	1.0	179.0	10.0	0.0	Perp to EUT	PK	-59.1	-2.6	42.0	-44.6	EUT on Side
0.375	40.3	10.1	1.0	35.0	10.0	0.0	Perp to EUT	PK	-59.1	-8.7	36.1	-44.8	EUT on Side
0.281	42.8	10.1	1.0	94.0	10.0	0.0	Perp to EUT	PK	-59.1	-6.2	38.6	-44.8	EUT on Side
0.236	44.0	10.2	1.0	291.0	10.0	0.0	Perp to EUT	PK	-59.1	-4.9	40.2	-45.1	EUT on Side
0.336	40.7	10.1	1.0	206.0	10.0	0.0	Perp to EUT	PK	-59.1	-8.3	37.1	-45.4	EUT on Side
0.138	48.1	10.2	1.0	224.0	10.0	0.0	Perp to EUT	PK	-59.1	-0.8	44.8	-45.6	EUT on Side